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of the few Finches which seemed much disturbed by him. The Towhee showed moderate excitement. The *Icteridæ* are uncommon in the Chocorua region, and none of them met Puffy in his native meadows. About Cambridge, however, Orioles, Red-wings, Crow Blackbirds, and Cow Buntings all showed marked excitement and anger at his presence. Nighthawks and Whip-poor-wills have not met Puffy. I hope next summer to arrange an interview with a Whip-poor-will who haunts my pasture bars. Once or twice Hummingbirds have buzzed a moment near Puffy's head, as if adding their small tribute of hatred to the general estimate of his character.

None of the few species of game and water birds found near Chocorua Lakes have seemed to show any interest in the Owls.

I have recently taken Puffy to Chocorua in the season of snow. Of the eight species of birds met only four saw the Owl. They were Chickadees, Red-bellied Nuthatches, Redpolls, and Blue Jays. They all scolded him, but not with the average summer emphasis. The Redpolls showed only mild curiosity which soon expended itself in gentle reproachful phrases. Puffy did not mind cold, but the light from the snow seemed to blind him. Indoors he held two young hounds at bay, and made their lives miserable by refusing to allow them to come near his corner without risking an attack from his beak and claws. With dogs and cats outdoors he always shows fear unless they come to close quarters; then, as indoors, he spreads and arches his wings, raises his feathers on his back, lowers his head, and snaps his beak, sometimes making swift rushes with an expression so fierce that I have yet to find any quadruped willing to defy him.

A SUMMARY OF OBSERVATIONS ON THE BIRDS OF THE GULF COAST OF FLORIDA.

BY W. E. D. SCOTT.

(Concluded from p. 22.)

Anthus pensilvanicus. AMERICAN PIPIT.—In the interior of the State I have noted this species as early as November 1. This was at Ocala in 1879. On the Gulf coast the birds appear in small numbers the latter part

of November, but are apparently never very common, nor regular migrants as far as time of appearance is concerned. Mr. Atkins noted "a flock of ten or twelve individuals at Key West on December 7, 1888, and a similar flock later in the same month."

Mimus polyglottos. MOCKINGBIRD.—An abundant resident on the Gulf coast of Florida. In the region about Tarpon Springs the birds begin to mate and are in full song about February 1. The earliest note of birds in song at this point is January 17. There are at least two broods, and probably three in some cases, reared during the breeding season, which lasts from the first of February to the last of July. Then there is a period of about two months when it is unusual to hear the song, but in October and November a secondary season of song begins which seems to conclude with the latter month, the birds beginning to sing again about the middle of January.

Mr. Atkins found the birds abundant residents at Punta Rassa, and says that at Key West they are "common in winter and in spring, but not detected breeding." This was during the years of 1887 and 1888. Later observations, in 1889, revealed a *single* pair breeding on the Island, and this was the only pair observed during the past summer. It is, therefore, fair to conclude that the birds are rare during the breeding season on the Island of Key West.

Galeoscoptes carolinensis. CATBIRD.—A common migrant and winter resident in the vicinity of Tarpon Springs, but not detected on the Gulf coast during the breeding season. The first birds arrive early in September, and they remain in numbers till April 1 to 10. Mr. Atkins's observations at Punta Rassa and at Key West, coincide with the above notes, but at Key West he observed two on May 25, 1889; these were not seen later.

Harporhynchus rufus. BROWN THRASHER.—This species' time of appearance and leaving on the Gulf coast appears to coincide very closely with that of the Catbird. Mr. Atkins found it at Punta Rassa after October 10, 1886, but only met with the species on three occasions in the region about that place. He has not observed it at Key West.

Thryothorus ludovicianus miamensis. FLORIDA WREN.—In 'The Auk', Vol. V, p. 187, this subspecies was referred to as the representative form of all the Gulf coast of Florida at least as far north as the mouth of the Anclote River. Since then a very large series has come under my observation, confirming this opinion. This series of birds embraces individuals of both sexes, and approximately of all ages, and consequently the seasonal variation in coloration is clearly shown, as well as some interesting phases of individual variation, and finally the variation due to age. Mr. J. A. Allen has kindly examined and compared this material with representatives in the collection of the American Museum of Natural History in New York.

I quote as follows from letters from Mr. Allen, whose views coincide in detail with my own.

"Of the forty-six Wrens (*Thryothorus*) thirty are males and sixteen

are females; they include thirteen birds of the year, which differ from the adults in being much paler, as well as smaller. Below they are dull, rather strong, buffy white, with faint blackish edges to the feathers of the jugular region and sides of the throat, varying in distinctness in different specimens. Above, the head is darker, and the chestnut is of a duller, darker tone.

"The range of individual variation in color in the adults, especially of the lower surface, is very marked, the color below varying from very pale to very strong cinnamon, with or without blackish bars on the flanks. There is a less marked variation in the tone of the reddish chestnut of the upper parts.

"There appears to be no sexual variation in color, several of the strongest colored birds being females. There is, however, a slight average difference in size, the wing in the females averaging one sixth of an inch shorter than in the males.

"Two of your specimens are exceptional in having the flanks strongly barred with black. One is a male (No. 6052, Tarpon Springs, June 7, 1893), the other a female (No. 6064, Tarpon Springs, June 13, 1893). The female is dark cinnamon below, the male very pale cinnamon. Both are adult birds. A number of other specimens show traces, more or less distinct, of blackish bars on the flanks, apparently about one specimen in ten. Those with broad, heavy black bars on the flanks are apparently in the ratio of about one to twenty-five. The heavily barred, strongly colored No. 6064 bears a striking resemblance to Mexican (Tampico) specimens of *Thryothorus l. berlandieri*, the latter differing in smaller size, a longer, slenderer bill, less intense chestnut above, and grayer head, wings and tail.

"Your series shows in a very interesting way the seasonal variation in color between summer and winter plumage. The winter (December to April) birds are much more intensely red above, and much stronger (almost reddish) cinnamon below, than the summer (breeding) birds, taken in May, June and July.

"I refer all of your specimens, and also a considerable series collected near Micco, on the east coast of Florida, by Mr. Frank M. Chapman, to *Thryothorus ludovicianus miamensis*. On the other hand Mr. Chapman's series taken at Gainesville, Florida, in winter are all referable to true *ludovicianus*. How much below Gainesville *ludovicianus* may extend in winter, or how much above the Indian River district of the east coast, and Tarpon Springs on the west coast, *miamensis* is found, cannot at present be determined. It seems probable, however, that the habitat of *miamensis* will include at least the southern half of the Florida peninsula, and that *ludovicianus*, even in winter, may be restricted to the northern half and northward.

"As to the differences characterizing the two forms, *miamensis* is much the larger, and much more strongly colored. Thus ten males of *miamensis* taken in June and July average as follows: Wing, 2.46; tail, 2.19; culmen, .70 inch; while ten males of *ludovicianus* from various localities

(New Jersey southward to North Carolina) average: Wing. 2.27; tail, 2.04; culmen .63 inch.

"The Tarpon Springs birds are evidently less differentiated from *ludovicianus* than Miami birds, on which *miamensis* was originally based, yet they are already so different from even north Florida birds that it seems better to refer the Tarpon Springs birds to the southern race."

I am greatly indebted to Mr. Allen for the very careful diagnoses and observations above quoted, and heartily concur in all he says.

Mr. Atkins did not find representatives of this subspecies at all commonly at Punta Rassa, where his only record is one taken on April 12, 1886. He has furnished me with no records for the Island of Key West.

Troglodytes ædon. HOUSE WREN.—A common migrant, arriving later in the fall, remaining throughout the winter in numbers, and leaving early in April for the north. The latest spring record at Tarpon Springs is of a male bird taken April 12, 1886. This specimen was moulting. Mr. Atkins says the species is a common winter resident at both Punta Rassa and Key West.

Cistothorus stellaris. SHORT-BILLED MARSH WREN.—A rather common winter resident in suitable localities in the vicinity of Tarpon Springs. Here I have taken the birds in both salt and fresh water marshes, though marshes of sedge grass where the water is brackish and the sedge not very high nor dense seem to be preferred. The birds arrive at this point in September and remain until April 1 to 10. Mr. Atkins has not met with the species at either of the points where he has collected.

Of the thirty individuals that have come under my notice at this point, the only marked variation in color is in the intensity of the buffish of the under parts, which varies from pale but decided buff to a deep shade approaching cinnamon. There is also a decided tendency to blackish barring on the flanks, which though absent in many individuals is very decidedly conspicuous in others. About one third of the birds examined have this characteristic more or less pronounced.

Cistothorus palustris. LONG-BILLED MARSH WREN.—A rather rare winter visitor in the vicinity of Tarpon Springs. About fifteen individuals have been collected in December and January in the past few years. Mr. Atkins has been unable to detect the presence of this species at either Punta Rassa or Key West.

Cistothorus marianæ. MARIAN'S MARSH WREN.—This species is an abundant fall, winter, and spring bird in all suitable localities in the region about Tarpon Springs and to the north of the mouth of the Anclote River at least as far as Cedar Keys, and probably on the Gulf coast of the State from that point northward and westward. I have found them most commonly on the salt water marshes at the head of tide water, but have detected them in the saw-grasses of the fresh water lakes and ponds that I have investigated for at least ten miles back from the coast. It seems probable that a few representatives breed, at least in the vicinity of Tarpon Springs, for though no nests or eggs have been obtained, I

have seen in all three or four *old* nests of Marsh Wrens, and the birds are present, though rare, in the marshes in summer.

In habits they are very like their near allies. The period of song does not seem to be wholly suspended, so far as I am aware, at any season. The season of song, however, really begins about the last week in January, and after that time it may be heard constantly until the middle of March or first of April, when most of the birds have left this region.

In character the song is similar to that of *Cistothorus palustris*, but the difference, though difficult to describe, is easily appreciated by the listener.

Sitta carolinensis atkinsi, subsp. nov.

FLORIDA WHITE-BELLIED NUTHATCH.

After carefully considering the representatives of *Sitta carolinensis* that occur in the region about Tarpon Springs, there appear to be such constant and regular deviations in color, size, and relative proportions of the different parts, from the representatives of the species collected from Massachusetts southward to North Carolina, that I feel warranted in calling attention to so well marked a form as occurs in this portion of Florida, and in suggesting the recognition of a new subspecies to be called *Sitta carolinensis atkinsi*. This name is given to record in a slight way my great appreciation of the careful work done by my friend Mr. John W. Atkins of Key West, on the birds of that portion of Florida.

Types, 3940 (Coll. W. E. D. S.), ♂, Tarpon Springs, Florida, April 21, 1887; 3164 (Coll. W. E. D. S.), ♀, Sept. 27, 1886, Tarpon Springs, Florida.

General characteristics.—Average of wing, as compared with northern birds, .20 in. smaller in males, .15 in. smaller in females. Bill relatively much longer and slenderer. Light markings of tipping of the coverts and quills of the wings decidedly narrower. A little less white in the tail. In the female birds the *black* of the top of the head and nape is *pronounced*, and it is difficult to distinguish the sexes easily, and in some cases impossible, by the color of these parts.

Average size of Sitta carolinensis as given by Mr. Robert Ridgway (Manual N. A. Birds): Wing, 3.60; tarsus, .72-.75; culmen, .84 inch. Wing, culmen and tarsus of four males and five females from vicinity of Tarpon Springs:

				Wing.	Culmen.	Tarsus.
3940.	♂ ad.	Tarpon Springs, Fla.	April 21, 1887.	3.28	.72	.70
3163.	♂ ad.	" "	Sept. 10, 1886.	3.40	.74	.68
7579.	♂ ad.	" "	Jan. 1, 1890.	3.44	.71	.69
7578.	♂ ad.	" "	" " "	3.38	.73	.71
3161.	♀ ad.	" "	Sept. 17, 1886.	3.40	.69	.70
3165.	♀ ad.	" "	" 27, "	3.34	.78	.70
3510.	♀ ad.	" "	Oct. 21, "	3.30	Broken.	.72
3164.	♀ ad.	" "	Sept. 27, "	3.21	.72	.68
5000.	♀ ad.	" "	Feb. 13, 1888.	3.26	.73	.69

Of these five females 3161, 3165, 3164, and 5000 are all deep lustrous black on head and nape without traces of grayish or plumbeous washing, while 3510 has these parts slightly suffused with plumbeous.

A young male nestling bird taken on April 21, 1887, just after leaving the nest, has the black of head and nape only slightly less lustrous black than in the adult birds.

The variation in the Florida form is mainly in the direction of the western subspecies *aculeata*, but the bill is less attenuated; the gray of the secondaries is purer, and there are other minor differences of coloration.

The birds do not appear to be common about Tarpon Springs, but are residents, and breed early in March.

Sitta pusilla. BROWN-HEADED NUTHATCH.—A rather common though locally distributed species in the region about Tarpon Springs. Here the birds are resident, and breed from early March to the latter part of April. Mr. Atkins took the species at Punta Rassa, where he considered it rare, but has not found it on the Island of Key West.

Parus bicolor. TUFTED TITMOUSE.—A common resident on the Gulf coast, at least as far south as Charlotte Harbor. Mr. Atkins did not record it at Punta Rassa nor has he found it at Key West.

Parus carolinensis. CAROLINA CHICKADEE.—Not quite as common as the last but apparently of about the same distribution. Resident, and breeds, in the region about Tarpon Springs. Mr. Atkins has not met with it at either of the points where he has collected.

Regulus calendula. RUBY-CROWNED KINGLET.—Common migrant and winter resident about Tarpon Springs. Arriving about November 1, they remain in numbers till late in March. Mr. Atkins has not recorded them at the points where he has collected.

Poliophtila cærulea. BLUE-GRAY GNATCATCHER.—A rather common resident in the region about Tarpon Springs breeding in April in numbers. Mr. Atkins regards it as a migrant at both Punta Rassa and Key West, at which points it is common. It is absent from these localities from about April 1 till the last of July or middle of August.

Turdus mustelinus. WOOD THRUSH.—A rather rare spring and fall (?) migrant on the Gulf coast of Florida. I have found them in the vicinity of Tarpon Springs in early April on two occasions. Mr. Atkins found them rather common at Key West on April 29, 1887, and saw the last ones on May 3, 1888.

Turdus fuscescens. WILSON'S THRUSH.—Not obtained in the vicinity of Tarpon Springs nor at Punta Rassa. Mr. Atkins found the birds common at Key West on April 28 and May 3, 1887. They were not observed later.

Turdus aliciae. GRAY-CHEEKED THRUSH.—Taken on rare occasions in the vicinity of Tarpon Springs in April. On April 28, 1887, two were noted, and one taken. Not recorded by Mr. Atkins at Punta Rassa nor at Key West.

Turdus ustulatus swainsonii. OLIVE-BACKED THRUSH.—Not observed

in the vicinity of Tarpon Springs, but Mr. Atkins found them at Key West rather commonly on April 28, 1887, and again saw them on May 3 of the same year.

Turdus aonalaschkæ pallasii. HERMIT THRUSH.—Common migrant and winter resident on the Gulf coast. Mr. Atkins found it common in winter at Punta Rassa and has a single record of it at Key West in January, 1889.

Merula migratoria. AMERICAN ROBIN.—An irregular migrant, but present in small numbers almost every year, and sometimes abundant. Appears late in December, and remains till the 10th of March which is the latest record. Mr. Atkins says it was irregular in its visits to Punta Rassa, but common at Key West in December and January, 1887.

Sialia sialis. BLUEBIRD.—A rather common resident, and breeds, at all points I have visited on the Gulf coast of Florida. Mr. Atkins has furnished me with no notes regarding the species.

In this paper I have attempted to bring down to date the latest information regarding the birds of the region in question, but notes accumulated which treat of the species dealt with in the preceding parts (the publication extending back some two years) seem worth presenting, and I hope to offer in an early number of 'The Auk' a synopsis of the series, with such additional information as will bring the latest knowledge obtained before the readers of this journal.

ON THE CHANGES OF PLUMAGE IN THE BOBOLINK (*DOLICHONYX ORYZIVORUS*).

BY FRANK M. CHAPMAN.

THE MARKED seasonal changes which occur in the plumage of the Bobolink have ever been made a prominent fact in the life-history of this well-known bird, but I am not aware that the subject has been studied with a complete series of specimens representing each stage of the bird's plumage as it appears throughout its range. For this reason, perhaps, we may account for the generally accepted statement, that the change in the male from the female-like plumage of winter to the black and yellow costume of spring, occurs without loss of feathers but by a change